

ABSTRACT

The present invention discloses a power toothbrush that includes a body portion 105. An elongated lever arm 102 extends from one end of the body portion to a toothbrush head 101 disposed at a distal end of the toothbrush. The toothbrush head includes a plurality of brush bristles. The elongated lever arm 102 is mounted on an vibrating pivot 104 driven by rotational DC motor engaging and pushing a set of permanent magnets attached to a two-arm fork rotating along the lever arm 102. In a preferred embodiment, the DC motor drives a three-leg permanent magnets each disposed at a 120-degree phase from each other for driving the two-arm fork for generating a vibration that three-times the frequency of the DC motor's rotational frequency. A power toothbrush capable of vibrating at a frequency of 30,000 to 40,000 toothbrush strokes per minute is disclosed in this invention. Furthermore, in another preferred embodiment, this invention also discloses an improved battery-charging configuration. The charging circuit for the battery provides a rectified DC current of 160mA to the battery by configuring the charging circuit as a secondary transformer circuit with the primary circuit connected to a frequency converter for providing high frequency input AC current as primary current for induced the secondary current. A highly efficient charging configuration is disclosed and the batteries of the toothbrush can be fully charged in about six hours instead of 16 to 24 hours required by a conventional power toothbrush.